

CLAIMS

1. A laser scanning unit comprising:
 - a housing;
 - a scanning device;
 - a pre-scan assembly generating a light beam and directing said light beam toward said scanning device; and
 - a post-scan assembly receiving a scanning beam reflected from said scanning device and causing said beam to traverse a photoconductive member along a scan path, said post-scan assembly comprising a sensor for detecting the beam at a start-of-scan location and an end-of-scan location along said scan path.
2. A laser scanning unit as set forth in claim 1, wherein said post-scan assembly further comprises a first element for directing said light beam toward said sensor to sense the beam at said start-of-scan location along said scan path and a second element for directing said beam toward said sensor to sense the beam at said end-of-scan location along said scan path.
3. A laser scanning unit as set forth in claim 2, wherein said scanning device comprises a rotating polygonal mirror having at least one facet, said pre-scan assembly directing said light beam toward said at least one facet at an oblique angle.
4. A laser scanning unit as set forth in claim 1, wherein said post-scan assembly further comprises:
 - a first lens positioned prior to said sensor for receiving said beam when it is at said start-of-scan location and focusing said beam onto said sensor; and
 - a second lens positioned prior to said sensor for receiving said beam when it is at said end-of-scan location and focusing said beam onto said sensor.
5. A laser scanning unit as set forth in claim 4, wherein said beam is rotated in a first direction relative to a process direction axis of said housing at said start-of-scan location and said

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beam is rotated in a second direction relative to said process direction axis at said end-of-scan location, said first direction being opposite said second direction.

6. A laser scanning unit as set forth in claim 5, wherein said first lens has a cylindrical surface for focusing said beam in a direction substantially parallel to a first lens process dimension axis and said second lens has a cylindrical surface for focusing said beam in a direction substantially parallel to a second lens process dimension axis.

7. A laser scanning unit as set forth in claim 6, wherein said first lens is rotated in said first direction such that its first lens axis is positioned at an angle relative to said process direction axis of said housing so as to correct at least a portion of said beam rotation in said first direction.

8. A laser scanning unit as set forth in claim 7, wherein said first lens is positioned such that its first lens axis is positioned at angle relative to said process direction axis which is greater than the angle at which said beam is rotated relative to said process direction axis at said start-of-scan location.

9. A laser scanning unit as set forth in claim 6, wherein said second lens is rotated in said second direction such that its second lens axis is positioned at an angle relative to said process direction axis so as to correct at least a portion of said beam rotation in said second direction.

10. A laser scanning unit as set forth in claim 9, wherein said second lens is positioned so that its second lens axis is positioned at angle relative to said process direction axis which is greater than the angle at which the beam is rotated relative to said process direction axis at said end-of-scan location.

11. A laser scanning unit as set forth in claim 6, wherein each of said first and second lenses further comprises a generally spherical surface.

12. A laser scanning unit comprising:

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a housing;

a scanning device;

a first pre-scan assembly generating first and second light beams and directing said first and second light beams toward said scanning device;

a second pre-scan assembly generating third and fourth light beams and directing said third and fourth light beams toward said scanning device; and

a post-scan assembly receiving said first, second, third and fourth scanning beams reflected from said scanning device and causing said beams to move along a corresponding scan path, said post-scan assembly comprising:

a first sensor for detecting one of said first and second light beams at a start-of-scan location and an end-of-scan location along a corresponding scan path; and

a second sensor for detecting one of said third and fourth light beams at a start-of-scan location and an end-of-scan location along a corresponding scan path.

13. A laser scanning unit as set forth in claim 12, wherein said post-scan assembly further comprises:

a first element for directing said one of said first and second light beams toward said first sensor to sense said one of said first and second beams at said start-of-scan location along said corresponding scan path and a second element for directing said one of said first and second beams toward said first sensor to sense said one of said first and second beams at said end-of-scan location along said corresponding scan path; and

a third element for directing said one of said third and fourth light beams toward said second sensor to sense said one of said third and fourth light beams at said start-of-scan location along said corresponding scan path and a fourth element for directing said one of said third and fourth light beams toward said second sensor to sense said one of said third and fourth light beams at said end-of-scan location along said corresponding scan path.

14. A laser scanning unit as set forth in claim 12, wherein said first and second sensors are mounted on a common circuit card.

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15. A laser scanning unit as set forth in claim 14, wherein said first and second sensors are mounted adjacent to one another on said circuit card, and said circuit card comprising opaque material where said first and second sensors are mounted.

16. A laser scanning unit as set forth in claim 12, wherein said post-scan assembly further comprises:

a first lens positioned prior to said first sensor for receiving said one of said first and second light beams when said one of said first and second light beams is at its corresponding start-of-scan location and focusing said one of said first and second light beams onto said first sensor;

a second lens positioned prior to said first sensor for receiving said one of said first and second light beams when said one of said first and second light beams is at its corresponding end-of-scan location and focusing said one of said first and second light beams onto said first sensor;

a third lens positioned prior to said second sensor for receiving said one of said third and fourth light beams when said one of said third and fourth light beams is at its corresponding start-of-scan location and focusing said one of said third and fourth light beams onto said second sensor; and

a fourth lens positioned prior to said second sensor for receiving said one of said third and fourth light beams when said one of said third and fourth light beams is at its corresponding end-of-scan location and focusing said one of said third and fourth light beams onto said second sensor.

17. A laser scanning unit as set forth in claim 16, wherein said scanning device comprises a rotating polygonal mirror having a plurality of facets, said first pre-scan assembly directing said first and second light beams toward a common facet at oblique angles and said second pre-scan assembly directing said third and fourth light beams toward a common facet at oblique angles.

18. A laser scanning unit as set forth in claim 17, wherein said one of said first and second beams is rotated in a first direction relative to a process direction axis of said housing at its

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corresponding start-of-scan location, and said one of said first and second beams is rotated in a second direction relative to said process direction axis of said housing at its corresponding end-of-scan location, said first direction being opposite said second direction.

19. A laser scanning unit as set forth in claim 18, wherein said first lens has a cylindrical surface for focusing said one of said first and second beams in a direction substantially parallel to a first lens process dimension axis and said second lens has a cylindrical surface for focusing said one of said first and second beams in a direction substantially parallel to a second lens process dimension axis.

20. A laser scanning unit as set forth in claim 19, wherein said first lens is rotated in said first direction such that its first lens axis is positioned at an angle relative to said process direction axis of said housing so as to correct at least a portion of said rotation of said one of said first and second beams in said first direction.

21. A laser scanning unit as set forth in claim 20, wherein said second lens is rotated in said second direction such that its second lens axis is positioned at an angle relative to said process direction axis of said housing so as to correct at least a portion of said rotation of said one of said first and second beams in said second direction.